

MARINE REVIEW.

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No. 16.

Twelve Representative Lake Steamers.

The supplement accompanying this issue of the REVIEW is somewhat extraordinary, presenting twelve large lake steamers instead of one, as is the custom. Probably no twelve steamers could be selected to show to better advantage the different classes of lake craft, as the collection includes six package freight liners, all controlled by railroad companies, and six general cargo steamers. The Foster and Owen are owned by the estate of the late Ira Owen and others of Chicago and were built by the Globe Iron Works Company, as was also the Cayuga. For limited speed and economy, the Owen boats having compound engines, are probably the best steel boats on the lakes. The America is one of three steel steamers owned by the Maytham syndicate, Buffalo. She held the grain cargo record of 111,507 bushels of corn until larger boats came into the trade last year. The America, Susquehanna and Owego were built by the Union Dry Dock Company. The Harlem made twenty-seven trips during the season of 1890, two more trips than any other liner, and carried 102,500 tons between Buffalo and Chicago, running on schedule time. The Harlem, Maryland, McVittie, Parnell and Palmer were built by the Detroit Dry Dock Company. The Lackawanna was built by the Cleveland Ship Building Company for the Lackawanna Transportation Company, and is doing good work in the package freight business. The Owego is the fastest steamer on the lakes, having made the run from Buffalo to Chicago 889 miles, in 54 hours and 15 minutes, 16.4 miles per hour. With her sister ship the Chemung, she has the finest coefficient of displacement of any steamer on the lakes and on her regular runs develops more power than any other lake vessel. Cards in the office of the MARINE REVIEW show that at 80 revolutions and with 160 pounds of steam the Owego's engines, the largest on the lakes, developed 2,606 horse power. Her engines are 28, 42½ and 72 by 54 inches stroke. Smaller steamers make 12 and 14 miles an hour with from 1,200 to 1,400 horse power and carry almost twice as much. This is only an example showing the great amount of power required to add a mile to the normal speed. The Susquehanna is owned by the Erie & Western, or Anchor line. The McVittie is one of eight wooden steamers owned by the Ogdensburg Transit Company, the lake line of the Vermont Central Railway. They are Welland canal size and run through to Oswego from Chicago. The Cayuga is one of five package freighters, all duplicates, owned by the Reading-Lehigh Valley combination and under the management of Mr. John Gordon, who also manages the Great Northern Railway Company's fleet of six steel steamers. For a long time the Maryland held the ore carrying pennant on the lakes, having carried 4,103 net tons from Escanaba to South

Chicago on a draft of 17 feet 4 inches. She is the flag ship of a fleet of seven ore carriers engaged exclusively in the Lake Michigan trade. The Parnell and Palmer are representatives of the general class of course freight carriers that have proven profitable to owners. The total net registered tonnage of these twelve steamers is 20,338, and valuation is \$2,165,000.

Capt. Edwin T. Chapman.

Capt. Edwin T. Chapman, whose portrait appears herewith, was in charge of the life saving station at Oswego for a number of years, and was recently appointed superintendent of the tenth life saving district, to fill the vacancy caused by the death of Capt. D. P. Dobbins. Capt. Chapman entered the service fifteen years ago as a surfman, and after a few years in the service was put in charge of a station. He is spoken of as an active gentleman and he can soon show his metal in the matter of life saving stations at Ashtabula and Niagara.

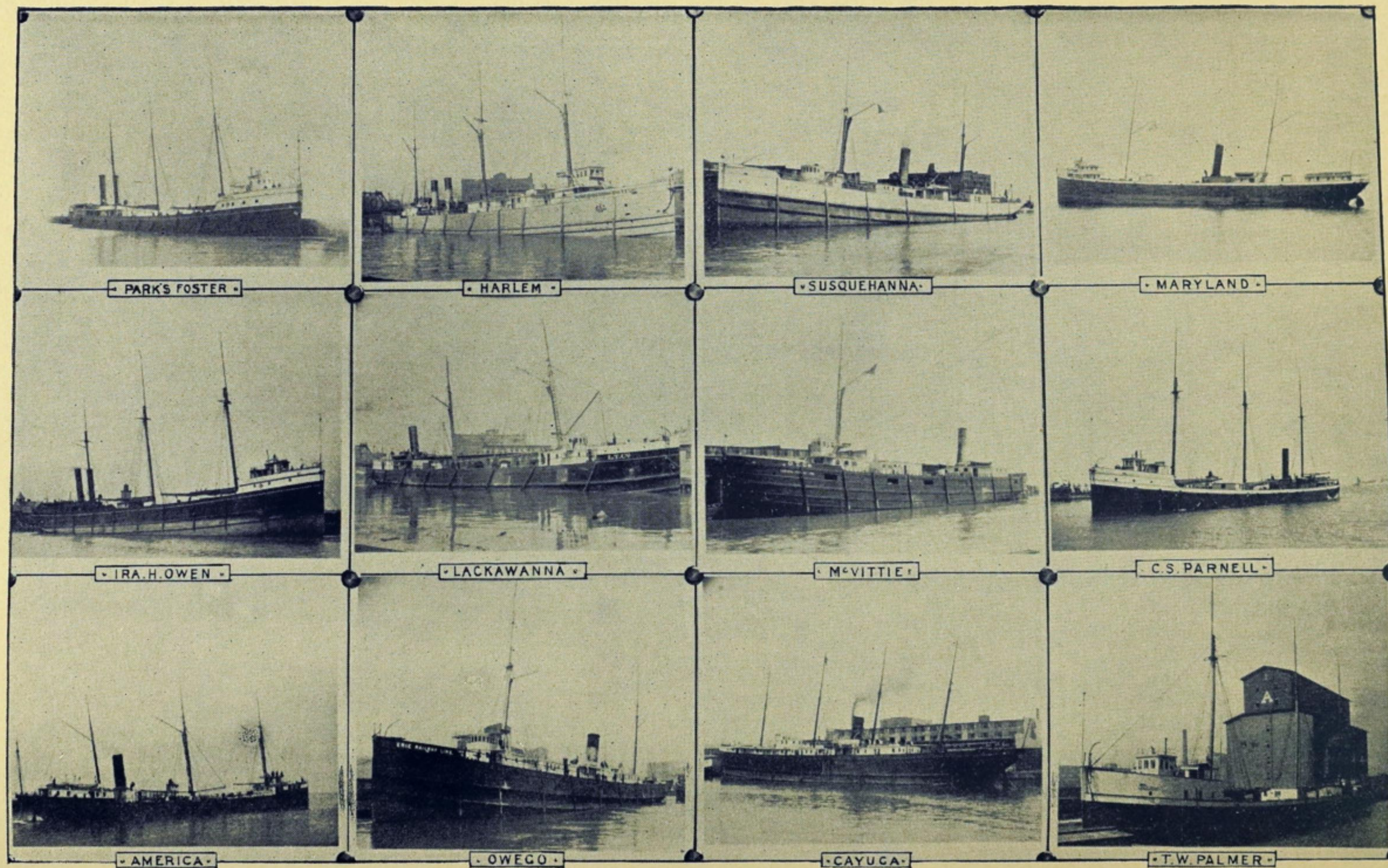


CAPT. EDWIN T. CHAPMAN.

Another Winter of Great Activity in Shipyards.

As a result of fair profits in nearly all branches of the lake business, now nearing a close for the season of 1892, and in view of the advanced fall freights now prevailing, a few more contracts for new boats may be expected, so that the value, if not the number, of craft to be built this winter, will undoubtedly be very much ahead of the value of the tonnage built in any previous year. The valuation will be increased through the five big passenger boats under way in Cleveland, Detroit and West Superior. These five boats—two in Cleveland for the Great Northern Railway Company, two in Detroit for the Detroit and Cleveland Steam Navigation Company and one at West Superior for world's fair service—will represent in the aggregate a value of no less than \$2,250,000, so that it will be readily seen that they will add materially to the total cost of next spring's new fleet.

If the Globe Iron Works Company, Cleveland, as well as the Detroit Dry Dock Company, had not taken the contract for these costly passenger boats when the outlook for work in the building of freight boats was not as encouraging as at present, it is more than probable that the number of keels for big steel freight boats would be largely increased. The same is true of the situation at the works of the American Steel Barge Company, where it is understood no new work will be taken for outsiders, on account of the rush to finish up for the opening of next season the world's fair boat. As it is, however, there is little doubt that all of the yards will be filled to their utmost capacity, several of them being practically in that condition already. The yard capacity of the Detroit Dry Dock Company and F.W. Wheeler & Co., can be increased without great expense.



Supplement to MARINE REVIEW, (Illustrated), Cleveland, O.

TWELVE REPRESENTATIVE LAKE STEAMERS.

Side-Wheel or Screw Steamers.

Considerable attention attaches to the recent run of the Old Colony side-wheel steamer Puritan and the twin screw steamer Richard Peck, 45 miles down Long Island sound, because there are building two passenger steamers at Detroit that will have engines of the same style as in the Puritan, in fact from the same builders, and there are two more building in Cleveland that will have twin engines and screws like those in the Peck, only larger. There is no need of entering into discussion as to whether the Puritan was racing or not. Mr. A. Angstrum, of the Cleveland Ship Building Company, who was designer with Old Colony company for several years, says the Puritan was not intended for particularly high speed and that she makes trips in less time than was desired. Eastern papers do not seem to have been able to get the dimensions of the Puritan or the size of her engines. She is 403.5 feet long, 52.5 feet wide and 18 feet deep. Her engines are compound, the high pressure 75 by 108 inches and low pressure 110 by 168 inches, with eight steel boilers carrying steam at 110 pounds. She develops about 5,000 horse power on her regular run, although capable of developing 7,500, and making 21 miles an hour. The dimensions of the Peck as given in daily papers are 316 feet long, 48 feet beam and 18 feet deep, the three cylinders being 24, 38 and 60 inches, developing 4,000 horse power. Mr. Angstrum says there is very little choice as to screw or side wheel boats for limited draft, excepting that more convenient arrangement of cabins may be had with the former. The captain of the Peck claims that in the 45-mile run his boat gained a mile on the Puritan and that the new screw steamer Maine was distanced easily.

Protective Policy Applied to Shipping.

In a letter to the Boston Transcript, William W. Bates, ex-commissioner of navigation, says in an article dealing in part with the wonderful growth of the lake marine: "Our ocean-going marine was marvelous, too, while our early protective policy of discriminative duties prevailed. It has perished because, unlike our lake and coasting marine, it ceased to be cherished by our government. Under free trade, as our ocean marine now is, the building and owning of the lake fleets, and the sites of some of our large lake cities would have been under the British flag. Canada, from the first, has had every advantage for the lake maritime business, but that of carrying freight and passengers from one American port to another and of building vessels for this trade. If Upper Canada (Ontario) had been one of our states it can not be doubted that several large ship building and ship owning centers—commercial cities of importance—would have been built up in that province by the lake traffic. That these centers and cities are now on our own soil is a result of protective policy, whether the same was wise or otherwise. The Canadians think our policy has been selfish—that we should have admitted their vessels to our trade and given to the British flag the lion's share of it, on the lakes as on the sea."

Personal Mention.

Capt. A. B. Drake of the steamer Brazil will command the new steamer Thomas Maytham, now nearing completion at the yard of the Chicago Ship Building Company.

Robert B. Dick of Philadelphia will be a candidate for the presidency of the Marine Engineers' Beneficial Association at the annual meeting to be held in Chicago in January.

Capt. J. A. Nicolson will command the new boat building at Morley's Marine City yard, and Capt. J. W. Nicholson, late of the Vienna, has taken the place of the former in the St. Lawrence.

Capt. W. H. Rounds, who was in Cleveland this week looking after the interests of the Aetna Insurance Company in the loss on the steamer Nahant, has been connected with marine insurance on the lakes for about twenty-five years.

In General.

A steel schooner yacht 90 feet long will be built by the Herreshoffs of Bristol, R. I., for a New York gentleman.

Industry of San Francisco in a tabulated statement shows that there are 112 engines, counting each cylinder an engine, in the battle ship Oregon. The stroke of all of them together would be over 25 feet and the total diameter would be over 33 feet.

Lake ship builders will shortly have a chance to bid on another coast light-ship. The boat, for which plans have been prepared by the light-house board, will be for service off Nantucket, Mass., and will be 110 feet long and 26 feet 10 inches broad, with a draught of 6 feet and will cost \$70,000.

The new light-house tender Columbine built by the Globe Iron Works Company of Cleveland and destined for service on the northern Pacific coast, will reach Portland from New York in about seventy days. She will stop enroute at Rio de Janeiro, Montevideo, Valparaiso and San Francisco. Lieut. Commander West, U. S. N., will take the boat on her trip around the horn.

The amount of shipbuilding, repairing, machinery making of all kind connected with vessel equipment carried on in the region of the great lakes is enormous. It shows beyond all statistics, the extent and importance of the navigation interests of that quarter. It is only a question of time when the ship machinery manufacturers of that region will endeavor to find steady customers on the seacoast. —Maritime Register.

Messrs. Escher, Wyss & Co. of Zurich have just finished building a yacht of aluminum which is three times larger than that recently exhibited at Frankfurt. Its length is 14 meters, equal to 45.7 feet, and it weighs, including machinery, but 1,500 kilos, or 3,312 pounds. The shaft is of steel and the propeller bronze. These parts, together with the masts and fittings, weigh 800 kilos, leaving the aluminum part but 700 kilos in weight. The hull retains the natural color of aluminum. The propelling power is naphtha and the yacht cost but \$4,400 it is said.

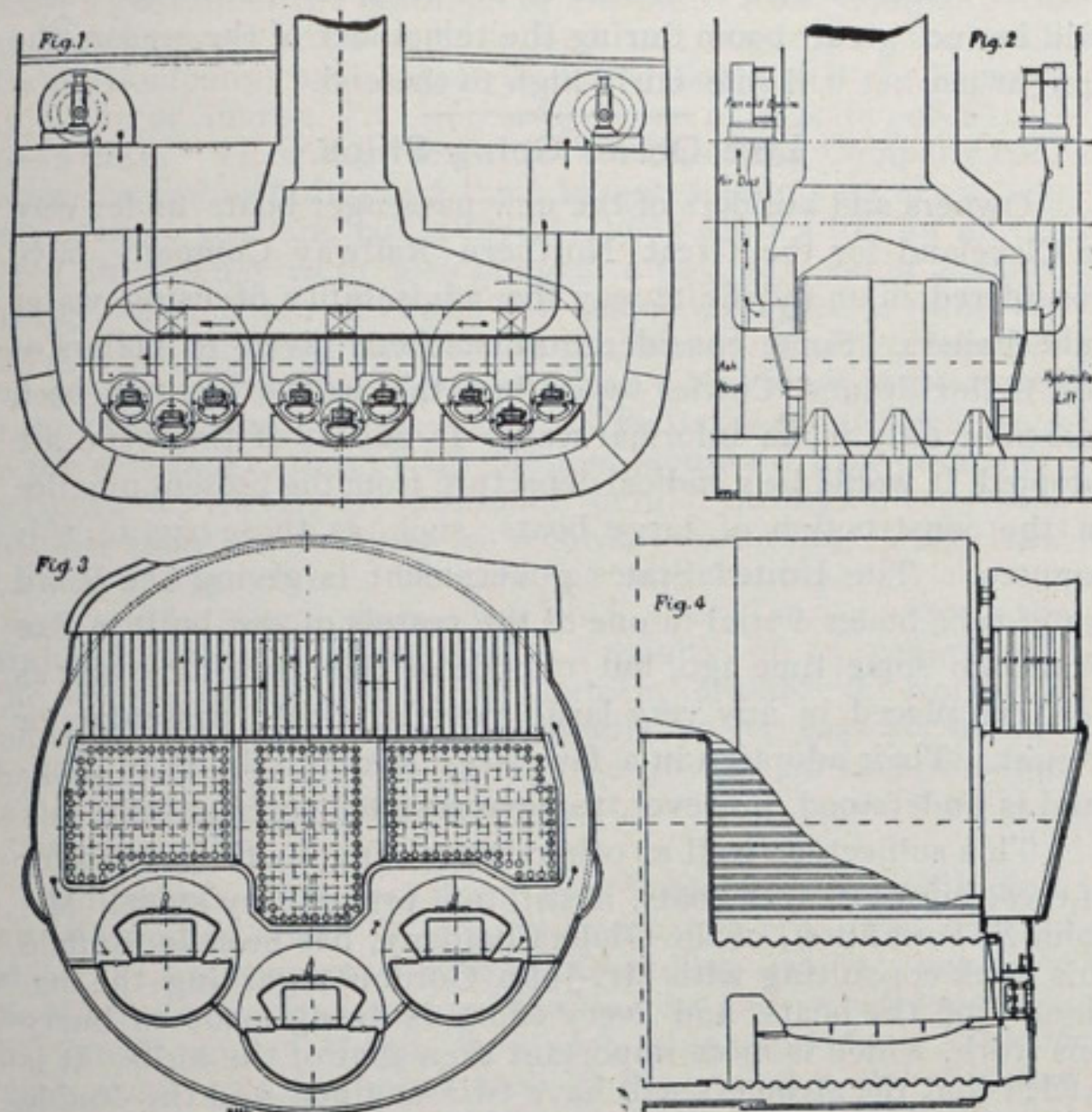
A new feature in modern naval construction will be contained in the two ships for which proposals were issued by the navy department last week. Each vessel will have three smoke pipes, 100 feet high, or higher by 30 or 40 feet than any smoke stacks on naval ships. These new stacks, it is thought, will do away with forced draught and give additional draft in ordinary steaming by reason of the increased force with which the smoke will be drawn through the high funnels. Another advantage looked for is that all smoke and gas will be carried clear of the marine tops and not interfere with the men there in working the Gatling guns and light fire pieces.

Superintendent Cooper of the Calumet and Hecla Smelting Company says that he has given considerable thought to the matter of using copper in building ocean-going vessels; copper plate of the thickness required would sell for 10 cents per pound after it had done years of service; that the avoidance of barnacles adhering to ships' bottoms by the use of copper was a great saving in fuel, etc. "This reminds us," says the Engineer, New York, "of a friend we had in days gone by who was always in straits financially. Noticing a great pile of beer bottles in his closet one day, we asked him if he was going into the junk business. 'No,' was the reply, 'I detest beer, but I buy it for the bottles. I can get 2 cents apiece for them when returned, and they come very handy when I am short.' We fear ship owners will not build copper ships because the plates are worth 10 cents a pound thirty-three years after they are launched."

The Pacific Coast Marine Record reprints the article on names of masts, published in the REVIEW several weeks ago, and comments on it as follows: "It may be noticed that there is a diversity of opinion as to what name is to be given to the entire vessel. The Marie Rickmers, the vessel used as an illustration by the MARINE REVIEW in the article, is called a bark by the Lloyds Register, and a ship by the Shipmasters' Record and the Bureau Veritas, while the Shenandoah is called a ship in all of the books. The distinction made by Lloyds Register is evidently one of rig, the Rickmers being square rigged on four of the five masts, while the Shenandoah is square rigged on all of the masts. It is evident that the other books mentioned call any vessel with three or more masts a ship if square rigged on at least three of them. The Record is not prepared to say which method is correct, but it is recommended that all adopt the same plan in order to avoid confusion."

Forced Draft in Lake Steamers.

The boilers of at least three lake steamers are equipped with forced draft arrangement under the Howden system. Two are passenger steamers, the Virginia and the Chicora, but the best example of the system for freight steamers is found in the Pioneer, built by the Detroit Dry Dock Company this spring. As a fuel saving device the owners of the Virginia speak very highly of it. That this economy can be turned to account in producing speed is proven in the Pioneer. Contracts have been practically closed for the application of the system to several lake steamers, and indications are that it will come into general use. Outside of owners who have had it applied, and engineers who have been in the boats mentioned, little or nothing is known of its workings.



The only diagrams and descriptions available show its use on the City of Paris, but there is no difference in theory and very little in its operation on lake steamers. The engraving shows the fans on deck, while on the lake vessels they are placed in the engine room. Air chambers are necessary on the City of Paris, but the volume of air required by a lake steamer can be furnished through a ventilator. The fans are 6 feet in diameter and are turned about 400 revolutions by a double engine, having cylinders 7 by 5 inches. The fans discharge downward through a square trunk, from the bottom of which an air pipe is fed downwards and along the up-take of the boilers immediately above the top of the boiler tubes. The chief feature of the system is the series of air heating iron tubes placed vertically in the base of the uptake, the bottom tube-plate of the air-heater containing the tubes being only one or two inches above the upper row of boiler tubes. Tubes in the City of Paris are 3 inches diameter and 34 inches long. This air heater extends nearly across the whole width of the front of the boiler above the tubes. The rectangular air pipe passes along immediately in front of the air heaters and continues across the three boilers. There is an opening at the vertical centre line of each of the boilers to allow the forced draught to pass from the main pipe into the air heater. After passing among the tubes the heated air flows down at each side of the outer smoke-boxes to an air reservoir which encircles the upper half of the furnace front, occupying the whole space upwards to the bottom of the smoke boxes. This air reservoir is separated from the smoke boxes by an air tight sheet iron casing. From this reservoir the air passes to the furnaces, part going into the ashpit and part into the flue above the fire, the supply to each place being regulated by separate valves. The valve for admitting the air above the fire slides on a flat plate, separating the air reservoir above from the space between the outer and inner furnace doors. These swing together on

one hinge, and when the door is shut the air passes between the outer and inner furnace doors maintaining a pressure in the space as well as around the interior of the furnace front. From the pressure space between the doors the air is admitted to the furnace through a number of air distributing boxes, perforated on the side against the fire with $\frac{3}{8}$ -inch holes. These can be drilled larger or smaller according to the rate of combustion. The air passes, or is forced, onto the surface of the burning fuel. Each ashpit has closed doors and the air pressure is also maintained beneath the bars. The temperature of the air in the reservoir is usually about 210 degrees and the pressure of course varies. At 370 revolutions the pressure was $1\frac{1}{2}$ inches in the reservoir and $\frac{3}{8}$ inch above the fire and in the ashpit. Illustrations and data are from London Engineering.

Conneaut Dock Facilities.

The Pittsburgh, Shenango & Lake Erie Dock Company, Capt. E. Day, superintendent, has completed 500 feet of dock at Conneaut, O. There are three Brown hoists that will be in readiness for unloading vessels this week, and two Excelsior derricks are now in operation. The channel is 100 feet wide and there is 17 feet of water up to the docks. A light will be erected on the pier about Nov. 1. About the only inconvenience is that vessels will have to tow out stern first until the winding slip is dredged, which will be in about thirty days. Two cargoes of ore have already been ordered to Conneaut, and some coal will be shipped during the present month. A large business in ore and coal will undoubtedly be built up at this port next season, as the officials of the railway and dock companies are interested in coal mines at Butler, Pa., and the railway makes direct connection for Pittsburgh with the Pittsburgh & Western from Butler, Pa.

The story that the harbor entrance had been filled up by a sand bar is entirely untrue. The improvements made by the new railway and dock companies include dredging to full 17 feet of water, and the projectors of the enterprise are certainly deserving of a great deal of credit for the business-like way in which they have practically opened up a new port on Lake Erie. The last river and harbor act gave Conneaut \$40,000 for improvements, but the appropriation calls for the beginning of work on new piers and an entire new channel to replace the old channel, which the dock company has improved. The people of Conneaut will make an effort at the next session of congress to have the appropriation applied toward an extension of the present piers, and their request should be granted. Col. Jared Smith, United States engineer of the district, has for good reasons delayed the beginning of work on the proposed new channel, and if the change in the appropriation is made, it can be effected without loss to the government. To begin a new channel on a small appropriation, with prospects of the entire work extending over several years, would seem useless in the face of operations already begun for the building up of a lake business at Conneaut.

Foreign and Coasting Trade.

The decline of the United States merchant marine engaged in the foreign trade is brought to mind by an enquiry from Marquette as to the tonnage at present engaged in it. For the year ending June 30, 1891, there were 1,516 United States merchant vessels of 988,719 tons engaged in the foreign trade. With the exception of two years, 1888 and 1890, this is the smallest tonnage engaged in this trade since 1847. In 1861 it reached its climax when a vessel tonnage of 2,496,894 tons was patronized in the way of freight charges by foreign countries. From 1855 to 1860 the tonnage engaged in the coasting trade and the foreign trade was about equal. Exclusive of small vessels and fishing craft, the tonnage engaged in the United States coasting trade is 3,529,315 tons, about four times as great as the foreign trade tonnage. Had the foreign trade of this country grown like the coasting trade, 16,534 foreign vessels would not have brought 11,309,509 tons into the United States last year.

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 13 Western Union Building, CHICAGO, ILL., Oct. 20.

There is a good deal of talk among marine men here over the new lift bridge to be erected at South Halstead street. As the bridge is to be raised above passing vessels, the height of masts is an important point. It is to be 140 feet above the water or above city datum, which is about a foot lower than the average stage of water. Masts of nearly all the larger schooners are over 140 feet high. The following is the height of a number of boats taken at random:

American Union.....	154 feet.	Bertha Barnes.....	150 feet.
J. G. Blaine.....	160 "	Cora A.....	145 "
J. I. Case.....	160 "	City of Chicago.....	142 "
F. L. Danforth.....	159 "	Charles Foster.....	171 "
Ida Keith.....	152 "	J. Kelderhouse.....	148 "
L. A. Law.....	161 "	W. O. Goodman.....	140 "
R. B. Hayes.....	146 "	Halstead.....	152 "
James Mowatt.....	148 "	North Cape.....	140 "
Thomas L. Parker.....	160 "	A. M. Peterson.....	156 "
M. W. Page.....	165 "	Minnie Slauson.....	146 "
Sunrise.....	145 "	John B. Wilber.....	140 "
G. W. Naughtin.....	138 "	Oak Leaf.....	140 "
E. B. Maxwell.....	138 "		

While marine men are almost unanimously in favor of Capt. Harmon's folding or jack-knife bridge at South Halstead street, there is a manifest indisposition on the part of many to enter into an active fight against the hydraulic lift bridge. They say that the city has given them what they asked—the center of the river for the passage of vessels—and if they now engage in another fight, it will be claimed that it has all been in the interest of one particular style of bridge. The amount of business done at South Halstead street bridge by these tall masted schooners is but a meagre fraction of that of steamers, steam barges, and towing schooners and barges. It is stated by those who have taken the most earnest part in the struggles of the past two seasons for the government control of Chicago river, that they cannot afford to enter into another contest for the saving of the high topmasts. On the other hand, the adherents of the topmasts are not disposed to give them up, and may make a fight for themselves before the war department.

The intimation, which started from somewhere, that Capt. W. L. Marshall, United States engineer here, will be sent to other fields at the expiration of his detail next February, will be generally regretted by marine men, if it be well founded. Capt. Marshall is probably better fitted for the duties of the position than any other officer who might be sent here. The questions connected with government control of Chicago river, which are likely to arise at any time, are complex, and it will take another officer fully six months to fully grasp the ins and outs of the situation. Capt. Marshall has as many friends among Chicago marine men as Col. Ludlow gained among marine men generally during his service for the light-house board. They know him as a man of no foolishness, who goes straight to the point in every issue and who is entirely without prejudice for or against the marine. His assignment to another detail would be a most serious loss.

The Island Transportation Company has recently added to its vessel property the passenger steamer Algomah, purchased from the Michigan Central Railroad Company. During the summer months she will be kept on the route between Mackinaw City, St. Ignace and Mackinaw island, being the only passenger steamer between those points. On this route is an immense passenger traffic. During the fall and spring months she will be fitted out as a wrecker and kept in readiness to assist any vessels that may be in trouble in the vicinity of the Straits. The members of this company are Capt. T. Boynton and J. F. Keightley of St. Ignace and D. T. Arnold of Mackinaw island.

Mr. William L. Brown, of Chicago, has been elected president of the Chicago Ship Building Company, succeeding the late Emmons Blaine.

Lake Freight Matters.

Grain moving from Duluth, Superior and Fort William at the head of Lake Superior to Buffalo is the main support of the lake freight market. At this writing, Chicago shippers, although crowded with stocks beyond expectation, claim to be unable to make sales at present prices of cereals and are doing little in the lake freight market, but this has not lessened the demand for vessels on Lake Superior, and 4 cents is freely offered from Duluth, with the latest Fort William charters reported at 4½ cents. The Chicago slump has been the means, however, of holding down the rate on ore from Escanaba, where shipments are pretty well up to requirements for the season, and Escanaba ore shippers secured on Wednesday a very large amount of tonnage, sufficient to run them far into next week. They were fortunate in finding a large coal fleet bound to Lake Michigan without return charters. With the advance in rates on grain from the head of Lake Superior, Ashland ore shippers have been compelled to pay \$1.30 on a number of charters and

it has been reported that in one or two cases an advance of 5 cents over this rate was paid quietly. However this may be it is certain that, on account of the grain movement, ore shippers have not been getting as much tonnage as they still require from the head of the lakes.

The delay in moving grain out of Chicago is a factor of weakness in the general freight market, but the demand for coal carriers has improved all around at increased rates and iron ore shippers are prompted to a somewhat larger output, on account of decreasing pig iron stocks and a slight improvement in the iron market. These conditions, together with the fact that elevators at the head of Lake Superior and Chicago are so crowded that grain must move to some extent irrespective of the present light demand for it abroad, cause most shippers as well as vessel owners to incline to the belief that, although there will be no great boom during the remainder of the season, the freight market will rule fairly high to the end.

Like Ocean Going Ships.

Owners and builders of the new passenger boats under way in Cleveland for the Great Northern Railway Company, have considered in an indefinite way the advisability of using water tube boilers. Some consideration has been given to boilers of the Belleville and Cowles types, but the matter has yet been talked of only in an informal way. If boilers of this type are adopted, it would be a radical departure from the present practice in the construction of large boats, such as these are, in this country. The United States government is giving the Ward water tube boiler a trial in one of the vessels of war built in San Francisco some time ago, but outside of this they have not as yet been placed in any very large vessels, either passenger or freight. Their adoption in a few large steamers built in England is understood, however, to have resulted satisfactorily.

This subject, as well as others pertaining to the machinery of these big passenger boats, is still in a preliminary stage. Mr. John F. Pankhurst, of the Globe Company, has been in Buffalo this week consulting with Mr. John Gordon regarding the machinery of the boats, and every effort is being made to hurry this work, which is more important than that of the hulls. It is settled that the steamers will have twin engines, and the double rows of state rooms, together with promenade deck, and other departures from lake customs in the construction of hull and cabins, will give them in every way the appearance of ocean-going ships.

Notices to Mariners.

Now it is the establishment of the Round Island light, St. Mary's river, to which the lighthouse board directs attention. A white lens-lantern light was exhibited at this point on Sept. 20, but the notice regarding it did not appear until Oct. 11. Thus all of the lights originally recommended for the river have been adopted by the board.

On or about Oct. 25, a light of the fourth order, showing a red flash every 10 seconds will be exhibited from the structure recently erected on the site adjoining the fog signal on Old Mackinac point, south side of the Straits of Mackinac, Mich. The focal plane of the light is 60 feet above lake level, and the light may be seen in clear weather, the observer's eye 15 feet above the lake level, 15¼ miles. Bearings and distances of prominent objects are: Cheboygan light-house, S. E. by E. ½ E., 16⅞ miles; McGulpin point light-house, W. ⅛ S., 2⅛ miles; St. Helena light-house, N. W. ⅞ W., 8 miles.

Wrecks and Heavy Losses.

The Canadian harbor tug Inter-Ocean, valued at \$7,000, caught fire and was totally destroyed on the St. Clair river, Thursday.

At Port Huron Tuesday the steamer Canada caught fire and is practically a total loss. She was valued at \$6,000 and owned by John Nesbit of Sarnia.

The schooner, J. E. Gilmore, driven ashore at Garrett's bay, near Death's Door, will be abandoned. She was owned by Capt. John Gerlach, Cleveland, was valued at \$3500, and was not insured.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company.....	\$100 00	\$.....	\$ 63 00
Champion Iron Company.....	25 00	.....	58 00
Chandler Iron Company.....	25 00	.....	46 00
Jackson Iron Company.....	25 00	.....	75 00
Lake Superior Iron Company.....	25 00	40 00	41 00
Minnesota Iron Company.....	100 00	70 00	75 00
Pittsburgh & Lake Angeline Iron Co....	25 00	.....	145 00
Republic Iron Company.....	25 00	10 00	12 00
Ashland	25 00	.....	.....
Section Thirty-three.....	25 00	.....	5 00
Brotherton.....	25 00	2 00	2 50
Iron Belt.....	25 00	2 00	2 50
Aurora.....	25 00	8 25	.....

James Sheridan, John T. Jones and J. B. Weimer, who leased a portion of the holdings of the Ohio Iron Company on the Mesaba range some months ago and organized the Ohio Mining Company, have transferred their lease to P. L. Kimberley & Co. of Sharon, Pa., in consideration of a bonus of \$105,000 in cash. Their contract with the Ohio Iron Company contained provisions obligating them to mine a minimum of 150,000 tons of ore a year and pay a royalty of 65 cents a ton for all ore taken out. They were also obliged to pay \$15,000 in advance royalty. Mr. Kimberley and his associates agree to fulfill the terms of the original contract and pay Messrs. Weimer, Sheridan and Jones a cash bonus of \$90,000 clear. Mr. Jones is interested in the new purchase of the lease. The terms of another lease on the new range, that of the Mesaba Mountain Iron Company, to Henry W. Oliver, are also made public through a copy filed with the county authorities for record. According to this lease the sum of \$75,000 is to be paid as advance royalty, 200,000 tons are to be taken out in 1893, and after Jan. 1, 1894, the minimum is to be 400,000 tons at a royalty of 65 cents a ton. The ore is to be handled by the Duluth, Mesaba & Northern, and when this road is unable to handle 80,000 tons per month, the lessee is excused from paying the royalty on such amount as the company is unable to transport.

Shipments of iron ore from Two Harbors up to and including Wednesday, Oct. 12, aggregated 1,022,112 gross tons, of which 581,912 tons were from the Chandler, 426,629 tons from the Minnesota, 2,525 tons from the Pioneer and 11,046 tons from the Zenith mine. On the same date shipments from Ashland aggregated 1,966,269 gross tons, divided among the different mines as follows: Ashland 177,179 tons, Aurora 275,926, Colby, No. 1, 4,961, Colby, No. 2, 51,850, Rand 17,700, Tilden 208,092, Iron Belt 144,741, Montreal, south vein, 3,383, Montreal, north vein, 31,233, Palms 63,381, Section 33, south vein 6,924, Section 33, north vein 3,133, Anvil 5,637, Brotherton 90,677, Comet 35,651, Carey 44,222, Newport 117,250, Imperial 5,803, Norrie 378,418, East Norrie 168,928, Odanah 4,373, Pabst 44,447, Eureka 8,317, Sunday Lake 43,332, Windsor 26,673, Jack Pot 2,717.

Congressman S. M. Stephenson is president of the reorganized Lumbermen's Mining Company, now in charge of the flooded Ludington mine. Peter L. Kimberley, who is to unwater the Ludington in connection with similar work on the adjoining Hamilton mine, which he controls, is vice-president of the new Lumbermen's company. Work has begun on a pipe line to carry the water from the mines to the city sewers of Iron Mountain.

Shipments from the Dunn mine, Menominee range, foot up about 120,000 tons to Oct. 1, and it is expected that the Shafer mine of the same district will have an output of about 80,000 tons for the season.

Managers of the Chandler mine, which had shipped 581,912 tons to Oct. 12, are now figuring on an output of 650,000 tons for the season. Stock piles are all cleared up. Last season's total shipments from this mine were 373,177 tons.

One of the whaleback vessels on the Atlantic, the Joseph L. Colby, a few days ago delivered at Philadelphia the first cargo of ore from the mines of the Sigua Iron Company in Cuba. Stockholders of the barge company are interested in these mines. The keel for the first barge to be built on the Pacific coast will be laid at Everett, Wash., this week.

Lake Carriers' Association.

M. A. BRADLEY, President.

VICE-PRESIDENTS: { James W. Millen, Detroit, Mich. John G. Keith, Chicago, Ill.
 Frank J. Firth, Erie, Pa. W. S. Brainard, Toledo, O.
 Thomas Wilson, Cleveland, O. R. P. Fitzgerald, Milwaukee, Wis.
 Peter F. Miller, Buffalo, N. Y. Alex. McDougall, Duluth, Minn.
 Charles H. Keep, Secretary, Buffalo, N. Y. Geo. P. McKay, Treasurer, Cleveland, O.
 Harvey D. Goulder, Counsel, Cleveland, O.

At a meeting of the finance committee of the association on Monday, Mr. Harvey D. Goulder, counsel, and Capt. George P. McKay, secretary, were instructed to communicate with the secretary of war, with a view to securing, if at all possible, the expenditure of a small portion of moneys already appropriated for St. Mary's river improvement of the channel in that portion of the river known as "Collision Bend," where the steamer Peck was sunk last season and where numerous costly accidents have since occurred. General Poe, who had been consulted previous to the meeting, says that the only money possibly available at present for this purpose would have to come from the special appropriation for the construction of the new lock, which also provides for "the improvement of the approaches thereto." The dangerous point where it is sought to have the channel widened by dredging is several miles below the canal, and this may prevent the application of any part of this appropriation to the proposed new work, but it is thought that the great need of something being done immediately toward preventing more collisions in this part of the river may move the department to extreme measures in providing relief.

Capt. William Nicholson of the Peshtigo Lumber Company, Chicago, sent in a communication with reference to the red light of the fourth order on Pilot island. He says that it had been proposed by the inspector and engineer of the district to change this to a fifteen-second white flash light, "prior to the establishment of the Plum Island ranges," but as no appropriation yet been made for these ranges, the promise seems very indefinite. The red light under certain atmospheric conditions can be seen only at a comparatively short distance. The secretary will communicate with the light-house authorities in reference to this matter.

The association had been informed that it was the intention of the navy department to relieve at the expiration of his detail, Commander Nicoll Ludlow, inspector of the ninth light-house district, (Lake Michigan,) with headquarters at Chicago. Commander Ludlow is an excellent officer and is in full accord with the light-house board in all matters pertaining to his district. Extended editorial reference is made in this issue to the action of the association in this regard.

The success attending the management of everything pertaining to the affairs of the reorganized association so far this season is a matter of gratification generally, and plans are now being made to bring into the organization during the coming winter every vessel of importance on the entire chain of lakes. An effort will be made to include all lumber carrying vessels and especially the large interests involved in the Chicago lumber trade.

Stocks of Grain.

The following table prepared from the Chicago Board of Trade report of the visible supply of grain on Saturday, the 15th inst., shows with comparisons stocks of wheat and corn in store at points of accumulation important to the lake traffic:

	WHEAT, BUSHELS.		CORN, BUSHELS.	
	Oct. 15, '92.	Oct. 8, '92.	Oct. 15, '92.	Oct. 8, '92.
Chicago.....	8,932,000	8,301,000	5,445,000	4,900,000
Duluth.....	4,289,000	3,653,000	.....	.....
Milwaukee.....	1,430,000	1,277,000	11,000	9,000
Detroit.....	1,110,000	1,000,000	25,000	31,000
Toledo.....	3,517,000	3,430,000	220,000	256,000
Buffalo.....	2,174,000	2,060,000	590,000	438,000
New York.....	12,682,000	11,566,000	1,441,000	1,351,000
Baltimore.....	2,004,000	1,865,000	172,000	58,000
Philadelphia...	1,700,000	1,707,000	268,000	271,000
Boston.....	250,000	295,000	199,000	168,000
Montreal.....	324,000	505,000	19,000	.....

This statement shows that at five lake shipping ports, Chicago, Duluth, Milwaukee, Detroit and Toledo, the increase for the week is 1,617,000 bushels of wheat and 505,000 bushels of corn, while at Buffalo and the five principal exporting ports on the seaboard, New York, Baltimore, Philadelphia, Boston and Montreal, the increase in wheat is 1,136,000 bushels and in corn 403,000 bushels.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, } PROPRIETORS.
F. M. BARTON, }
HOMER J. CARR, Associate Editor and Manager Chicago Office,
Western Union Building, 110 LaSalle Street.

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Tonnage built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	No. of boats.	Net Tonnage
1887.....	152	56,488.32
1888.....	222	101,102.87
1889.....	225	107,080.30
1890.....	218	108,515.00
1891.....	204	111,856.45
Total.....	1,021	485,042.94

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 228 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014. Number of boats through St. Mary's Falls canal in 1891, 225 days of navigation, 10,191; tonnage, net registered, 8,400,685. Number of boats through Suez canal during 1891, full year, 4,207; tonnage, net registered, 8,698,777.

Entered at Cleveland Post Office as Second-class Mail Matter.

GEN. POE has submitted a report preparatory to advertising for proposals on the great 20 and 21-foot channel project between Chicago, Duluth and Buffalo, and Gen. Casey, chief of army engineers, pronounces this project, together with the St. Mary's Falls canal and Hay lake channel improvements, the most important engineering work now under the direction of his department. As is generally understood on the lakes, this last great scheme for deep water, to the early completion of which congress has pledged itself for the entire necessary appropriations, contemplates the removal of obstructions at six different points in connecting waters between Lake Superior and Lake Erie. The improvements at St. Mary's Falls canal and the Hay lake channel will probably be finished in three years at the present rate of progress, and the new project for the removal of obstructions at other points will require about the same or a little longer time, and when completed there will be a minimum depth of 20 feet throughout the entire course from the upper lakes to Lake Erie. As soon as Gen. Poe's report is approved by Acting-Secretary Grant, the district officer will be authorized to advertise for proposals for the entire work, so that there seems to be nothing now in the way of work being commenced on this big dredging contract with the opening of navigation next spring.

IN asking that Commander Nicoll Ludlow, lighthouse inspector in charge of the ninth district (Lake Michigan), be permitted to remain on his present duty until such time as his services are imperatively required elsewhere, the Lake Carriers' Association gives expression to its views on the matter of changes in this service on the lakes. It is a great disadvantage to the interests which this association represents that officers on lighthouse duty are so frequently changed, and if the circumstances were fully understood in the navy department, it is very probable that some arrangements could be made that would obviate the difficulty. The water areas of the lakes are large, the navigation beset with dangers, and the aids to navigation needed for safety are numerous. To form an intelligent opinion as to what is needed in respect of these, the lighthouse board must of necessity depend almost entirely on the reports and recommendations of the district officers. It takes an officer freshly detailed to this duty two or three seasons of careful investigation and close personal experience to familiarize himself with the peculiar duties of lake work and become practically informed of its needs. About the time he has acquired the necessary information he is sent elsewhere and a new detail is made. It will

readily be seen that these arrangements are a serious detriment to the shipping interests and should be modified.

As regards the particular case of Commander Ludlow, the association has found him especially interested in and appreciative of the needs of his district, and unremitting in the discharge of his duties, and his personal and professional work has been conspicuous for efficiency and value. He has been on the lakes but two years and has commended himself in an exceptional degree to the vessel interests, which are greatly indebted to him for valuable information, and intelligent judgment and co-operation.

A MOST forcible illustration of the power of lake lines in making freight rates for the most important portion of the United States was presented last week when the Great Northern Railway, operating the Northern steamship line between Buffalo and the head of Lake Superior in connection with the Erie and Reading railroads, reduced rates from the northeast to New York and New England 50 per cent. on some lines, on the grounds of irregularities on the part of the managers of the "Soo" line. Traffic associations may make rates and attempt to adjust radical cuts of this kind, but it must be evident to all concerned that as rail rates have been lowered with the building of many roads, so also will the great package freight lines of the lakes, now undergoing a change to big and powerful vessels, be likely to have a great influence in making railway rates. With the various extensions of the Great Northern Railway to the Pacific coast, through the Dakotas and Montana, and with its Buffalo connections, it is evident that President Hill of this line proposes to secure the greater portion of this traffic. Mr. Hill is evidently carrying out in its full meaning the declaration that rates from Duluth and Chicago to the east should be alike, as these cities are nearly equally distant by way of the lakes.

IT is understood that Senator McMillan of Michigan proposes to call up the Ludlow-Heyerman case for investigation the moment congress convenes, unless the secretary of the treasury takes steps publicly in the meantime to vindicate the district officers. The matter still hangs fire with Secretary Foster but it is earnestly believed that he will yet see the error of not granting justice to the officers. If the case is not disposed of before congress assembles, the able Michigan senator, Mr. McMillan, will find support of the strongest kind from lake interests in his demand for a congressional investigation. A late report from our Washington correspondent relative to this case is to the effect that the signatures attached to the minority report from the light-house board to Secretary Foster were those of the three senior members of the board, Colonel Ernest, Colonel Elliott and Commodore Gillis.

WHERE are the railway advocates of Buffalo who were predicting a few years ago that the great trunk lines were soon going to starve out the lake trade? In elevator capacity Buffalo has not kept pace with the wonderful growth in the lake grain commerce, partly on account of these predictions, until now we have had practical experience with a most disastrous grain blockade in one season and fears of a repetition of the trouble this fall.

F. D. HERRIMAN, representing the Bureau Veritas, has established an American lake department in Chicago and is prepared to carry on a business in the inspection and classification of lake vessels. Thus another of the great classification associations of the country is now represented here, and it will be well for the vessel owners and builders to give immediate and careful attention to their methods.

GET TWO SUBSCRIBERS TO THE MARINE REVIEW AND YOU WILL RECEIVE A COPY OF THE LIFE AND VOYAGES OF CHRISTOPHER COLUMBUS.

Short History of Lake Navigation.

(By C. H. Keep, Secretary Lake Carriers' Association.)

In the meantime the iron district of Lake Superior having become somewhat developed and the product of copper having increased so rapidly as to force all in interest to agitate the question of greatly enlarged facilities for meeting the necessities of a promised largely increasing traffic to and from Lake Superior, a preliminary survey and estimate for the building of the St. Marys Falls ship canal was undertaken. In this enterprise the Hon. O. D. Conger (afterwards a member of congress and senator from Michigan) took an active part, although we think that late Mr. John Burt of Michigan was director of the survey. The reports thereof, as submitted, induced the congress of the United States to pass an act donating to the state of Michigan 750,000 acres of the public lands within its borders for the purpose of building a ship canal around the falls, stipulating, however, that the canal should not be less than 100 feet in width and 12 feet deep, with two locks not less than 250 feet long and 50 feet wide.

Mr. Charles T. Harvey, now residing at Nyack, N. Y., having had his attention drawn to the subject, immediately devoted his time and energies to bring the matter into proper form and was largely instrumental in drafting the state law to govern the prosecution of the proposed work. It was at his instigation, though with much hesitation on the part of the then state legislators, that the size of the locks was increased to 350 feet in length and 70 feet in width, with a lift of 18 feet to overcome the difference between the levels of the lower St. Mary's river and the waters of Lake Superior.

The proper legislation on the part of the state of Michigan having been secured, Mr. Harvey brought the subject of building the canal prominently to the attention of some of the wealthy men of the country, among whom were the Hon. Erastus Corning of Albany, N. Y., then president of the New York Central Railroad Company; Governor Horatio Seymour of Utica, N. Y., and Hon. Joshua Fairbanks of St. Johnsbury, Vt. These men, in connection with others, formed a syndicate and agreed to build the canal and locks complete, and to take in full payment therefor the 750,000 acres of land donated by the government. This proposition was accepted on the part of the state of Michigan, and a formal contract was awarded to them. As the constitution of Michigan did not permit a special charter for a construction company, Mr. Harvey's next move was to apply for a charter at the hands of the legislature of New York. In this he succeeded, and under the charter so obtained the St. Mary's Falls Ship Canal Company was organized. These preliminary arrangements having been perfected, and the company being fully ready for business, and appreciating Mr. Harvey's ability and energy, he was appointed general agent, with full executive powers for prosecuting the work, and on or about June 1, 1853, he landed at Sault Ste. Marie with a force of from 300 to 400 men, and on the 4th of the same month he broke ground and the work was duly commenced.

We should not, however, lose sight of the fact that prior to the commencement of actual work on the canal, Capt. Augustus Canfield, of the United States engineer corps, had been designated on the part of the general government to superintend the work on its behalf, while Col. Glenn of Niles, Mich., a civil engineer, was designated as the resident engineer, on behalf of the state of Michigan (the latter subsequently selected as his assistant Mr. Nichols, who had had more or less experience with canal building by a long supervision of the Erie canal and its branches between Buffalo and Albany, N. Y.,) and the reader may be assured that these gentlemen, with little or no practical information in regard to the construction of a work of such magnitude, encountered many difficulties and serious obstacles in the undertaking.

In the winter of 1853 and 1854, the managers of the syndicate for building the canal being somewhat discouraged as to the reported progress of the work (which was due in part to the infrequency of the transmission of mails between Sault Ste. Marie and the outside world, the mails being carried between the Soo and Saginaw during the winter at irregular intervals by men on foot), and Mr. Harvey being unable to leave the work as then progressing for the purpose of visiting the managers, Mr. J. T. Whiting, who had become a prominent business man of Sault Ste. Marie, and who had a fair knowledge of the work from its early commencement, was asked and undertook, for the benefit of all in interest, to visit and give to the managers of the syndicate a personal statement as to the actual condition and prospective progress of the undertaking.

The journey was duly accomplished, although it involved a walk on snow shoes from Sault Ste. Marie to Saginaw, a distance in the neighborhood of 400 miles.

The result of the trip proved highly satisfactory and advantageous in stimulating the directors of the canal company to have the work pushed with renewed energy from and after the opening of navigation in the following spring, so much so, that all the obstacles and perplexities were conquered in such a manner that the canal was completed on the 19th day of April, 1855, but, owing to a leak in the north bank, no boats were passed through until the 18th of June following, when the steamer Illinois, commanded by Capt. Jack Wilson, passed through it bound up, enroute for the then generally used ports of Lake Superior. She was followed the same evening by the steamer Baltimore, commanded by Capt. John Reed, bound down for Buffalo. From this date the canal, with its locks, was brought into general use.

And just here it may be but right to say that Mr. Sheldon McKnight and the Chippewa Portage Company, prior to the completion of the canal, had placed the following named propellers and side-wheel steamers on the route between Cleveland Detroit, Sault Ste. Marie and the various ports on Lake Superior, viz: Monticello, Baltimore, Peninsular, Ben Franklin, London, Albany, and Illinois. The Monticello, Baltimore and Peninsular, having been hauled across the portage as the business required.

Also, that Mr. J. T. Whiting remained connected with Mr. McKnight in the business from the spring of 1848 until 1858, and that he again entered into the Lake Superior carrying trade in 1860 and still continues engaged therein.

Though the construction company was organized on a capital of \$1,000,000, there is reason to believe that the actual cost of building the canal was something less than \$900,000.

The canal, under the grant of land for its building by the act of congress, being held in trust, as it were, by the state of Michigan for the benefit of all concerned, was placed in the hands of the state board of control, consisting of the governor, state treasurer, and auditor general, who, by virtue of their authority, appointed Mr. John Burt as the resident engineer and superintendent of same. They also had the power to fix and establish the rate of toll that should be charged on the registered tonnage of all vessels passing through the canal; and this was done, taking effect with the first boat passing through and continuing in force until the state of Michigan ceded all its right, title and interest in the canal back to the government, in the spring of 1881, when the toll system was abolished, and the canal became a free waterway, open to the navigation and commerce of all who desired to use it.

In the meantime, however, in about the year 1861, the north bank of the canal, as well as one of the locks, began to show marked indications of weakness, and after a thorough examination by some of the best civil engineers of the day were found to require the expenditure of what was then considered a large sum of money for repair and preservation; and congress failing to provide therefor the board of control, under a special act of the legislature of Michigan, were authorized to make a loan of \$50,000, for which so-called canal bonds were issued, and the accruing tolls of the canal were pledged for the interest and final payment of these obligations.

The board of control acted promptly in obtaining the money and making the required repairs on the canal, and with equal promptness increased the rate of tolls thereon to such an extent that the bonds were not only fully retired at maturity, but at time of ceding the canal back to the general government the canal account had a credit of some \$60,000 on the books of the state treasurer, which, with its accrued interest, still remains in possession of the state, though by a subsequent act of the legislature, the same has been appropriated to apply on the building of a dry dock in connection with the canal, whenever the United States government may assent thereto, and provide the additional money for that object.

The negotiations attending the transfer of the canal from the state to the general government would doubtless prove an interesting page in its history, but possibly may not be appropriate to the "Early Navigation of Lake Superior," nor does there at this time seem a necessity of incorporating herein any further reference to that grand work, the St. Mary's Falls ship canal, except to say that for the season of 1855 it showed a registered tonnage passing through it of 106,296 tons, while in the season of 1891, consisting of 225 days, the records show a registered tonnage of 8,400,685 tons, with a total net freight tonnage of 8,888,750 tons, including 69,190 net tons copper, 3,-

560,213 net tons of iron ore, 3,780,143 barrels flour and 38,816,570 bushels of wheat.

In bringing this review of early days to a close, it may be proper to call attention to the fact that the early navigators of Lake Superior, among which we find the names of Captains Stanard, John McKay, Bendry, Smithwick, Wood, Brown, John Stewart, Reed, Jack Wilson, Lamphier, Clark, Averill, Angus, Redmond Rider, Caldwell, Spaulding, Easterbrook, Sherman and Ripley, as pioneer masters, are entitled to credit for the great skill manifested in successfully navigating its unknown waters, unaided by any reliable charts, light-houses, or other governmental aids to navigation. It may be truthfully said "they builded better than they knew," for they, in connection with the early explorers and the successful investors and seekers for mineral wealth on the shores of Lake Superior, first gave birth to the thought that that lake might be made a part of one of the great highways of commerce between the Atlantic and Pacific oceans. They traversed unknown and unexplored waters with a success that was worthy of the enterprise, energy, watchfulness, care, and skill manifested in their vocation, for, as we now recall, there was but one fatal casualty occurring among them, from the opening of navigation on Lake Superior in 1844 to the opening of the canal in 1855. This was the loss of the schooner Merchant, commanded by Capt. Brown, sailing from Sault Ste. Marie for Copper Harbor and other ports, in the season of 1847. Neither she nor any of her crew or passengers were ever heard from.

As a matter of historical reference it may be said that the first light-houses on Lake Superior were built as follows: At Whitefish point in season of 1847; Copper Harbor in 1848; Eagle Harbor in 1850; Ontonagon in 1852, and Marquette in 1853, while the first surveys of the south shore of Lake Superior, within the limits of the United States, were not commenced until the year 1855, and charts thereof were not issued until some years thereafter.

Work of the Ship Yards.

A fish tug, the Elk, launched Saturday at Grand Haven by Capt. Kirby is 9 feet longer than the Deer. She will be engined by S. F. Hodge & Co.

The steamer, W. B. Morley, of about 1050 net registered tons and valued at \$100,000, was recently launched from the Morley yard, Marine City, and is now receiving her engines at Detroit.

Hurd & Hannenstein, Buffalo, have finally awarded the contract for their new steamer to Alex. Anderson, Marine City, Mich. She will be a lumber carrier 190 feet keel, 35 feet beam and 13 feet deep.

A steamer for the Williams Transportation Company, South Haven, Mich., will be launched next week. She will get her engines at Grand Haven from Bloecker & Co. The boilers are from Johnston Bros.

Tracks for the traveling crane at the yard of F. W. Wheeler & Co., West Bay City, Mich., have been lengthened 350 feet. Work on the three steel steamers for D. C. Whitney of Detroit, Mitchell & Co., and the Hawgood & Avery Transit Company, Cleveland, is progressing rapidly. One is in frame and will soon be ready for plating.

The most important contract closed during the week was for a steel steamer 302 feet and 3 inches over all, 284 feet keel, 38 feet beam and 24 feet deep, to be built by the Globe Iron Works Company for the Lorain Steamship Company, which owns the steamer Vulcan. The engines and boilers have not been decided upon yet, but will probably be of the same size as those in the Vulcan, 27 and 50 inches the boilers being 9 by 14 feet.

In addition to the whaleback passenger boat, the American Steel Barge Company has four tow barges under way, two of them well advanced on the stocks and material being prepared for the other two. These boats have been spoken of as merchandise carriers, and strangely enough the barge company proposes to use them in carrying flour and other merchandise through the Welland canal. All of them will be of canal size (265 feet) and the company has the steamers Bartlett and Thomson on the lakes, also of canal size, to tow them. The new boats will have seven gangways on each side and winches on deck for hoisting and lowering cargo into the hold.



James Davidson's latest schooner, just beginning service, is named Aberdeen.

Capt. James Galvin of Buffalo has purchased the lumber barge Dan Rodgers from Keenan & Gilbert.

Henry Lay of Sandusky has purchased the tug E. C. Oggel from Capt. S. O. Day of Muskegon for \$1,050.

H. M. Loud & Sons of Oscoda have purchased the steamer Charles A. Street from W. A. Loutit and others of Grand Haven and Chicago for \$40,000.

It is claimed that the Vandalia line of steamers on Lake Michigan will not be abandoned as soon as the Minnie M. and Lora are sold, but that two or more steamers will be built at West Bay City that will specially suit this trade.

Gen. Poe says that a great deal of time has been devoted to preparation of plans for the deep channel between Buffalo, Chicago and Duluth and that with his next monthly report information necessary to the issuance of specifications will be submitted.

The St. Lawrence river steamer Sylvan Stream was sold for \$20,000, about one-fourth of her cost, to Folger Bros., Kingston, by Homer B. Stevens of Rochester, receiver of the Genesee River and Lake Ontario Navigation Company. About \$10,000 will be expended in refitting her.

Vessel captains and crews running into Chicago need not be alarmed if they run through an uncanny stream of light some night. The search light on top of the world's fair transportation building is in operation and is powerful enough to illuminate Michigan City across the lake. The light was manufactured by Schuckert & Co., Nuremberg, Germany.

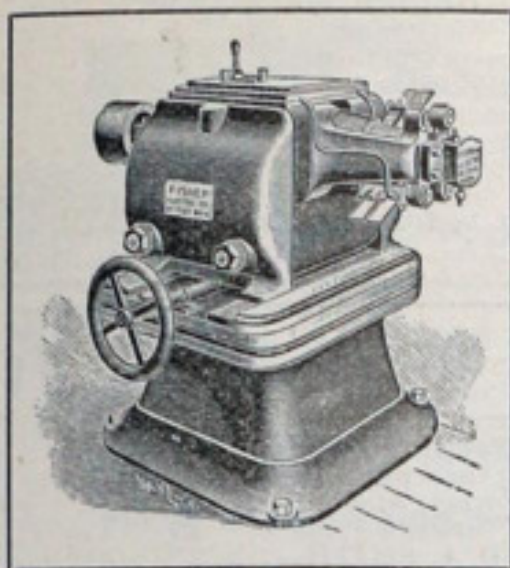
H. D. Turney and others now operating large coal docks at Ashland and Manitowoc for handling bituminous coal are figuring for dock property in Duluth. They have options on two or three sites in Duluth and will invest a large sum of money in both land and equipment. The aim is to reach through Duluth a large consuming territory that can not well be covered from Ashland.

Customs officers at Marquette are dealing severely with masters of small steam craft violating laws regarding lights. Licenses of Edmond Allie and Jessie Goodwin have been suspended for ninety days, and John Parker whose license had expired will be called upon by the United States district attorney to appear before the federal court. Inquiry into the matter was caused by a tug capsizing a row boat resulting in the drowning of a man.

There was received at Milwaukee by lake during September 73,527 tons more of anthracite and 5,279 tons more of bituminous coal than during the same month in 1891. Receipts for the season to Oct. 1 at that port are not, however, as large as in 1891. The total to Oct. 1, 1892, is 527,632 tons of anthracite and 222,433 tons of bituminous, or a total of 750,065 tons; to Oct. 1, 1891, 555,969 tons of anthracite and 207,442 tons of bituminous, or a total of 763,411 tons.

Customs house reports on the receipts and shipments of iron ore and coal at Ohio ports are not complete, but they will serve for comparative purposes. On Oct. 1 these reports show receipts of ore at Cleveland, Ashtabula, Fairport and Lorain aggregating for the season 4,474,041 gross tons, against 3,128,718 gross tons on the corresponding date in 1891. Shipments of coal from these four ports to the same date foot up 1,447,863 net tons against 1,177,248 net tons during the same period in 1891.

Capt. George Breckenfeld, keeper Racine life saving station, has been making soundings in the harbor and finds it in a deplorable condition. From the north pier light-house west 100 feet and for 60 feet into the river there is not over 5 feet of water. On the south side for a distance of more than 100 feet and 20 feet into the river there is not over eight feet of water. This leaves a channel barely wide enough for a loaded vessel to enter. In this channel there is about 13 feet of water.



READ THE LIST OF THE BEST CLASS OF STEAMERS ON THE LAKES EQUIPPED WITH FISHER ELECTRIC LIGHTING PLANTS.

Yachts.

Whilaway	25 lights.
Steel yacht Princess	20 "
Col. Reynolds yacht, Sigma, (direct connected set), 140 "	
Mr. H. M. Hanna's yacht, Comanche, (two direct connected sets)	250 "
Mr. W. J. White's yacht, Say When, (direct connected set)	100 "

Miscellaneous Steamers.

Sam'l Mitchell	225 lights and one search light.
S. R. Kirby	200 lights.
John W. Moore	150 "
Maryland	425 "
Pathfinder (whaleback) 225 incandescents and two arc lights.	
Pioneer, (direct connected set, 150 incandescents and two arc lights.	
Arthur Orr, (direct connected set)	150 lights.
Thomas Maytham, (direct connected set)	150 "
Castalia, (another plant removed)	200 "

LINES AND FLEETS.

Northern Steamship Co.

North Star	225 lights.
North Wind	225 "
Northern Light	225 "
Northern Queen	225 "
Northern King	225 "

Lehigh Valley Transportation Co.

E. P. Wilbur	300 lights.
Cayuga	300 "
Seneca	300 "
Saranac	300 "

Lake Superior Iron Co.

Griffin	225 lights.
Wawatam	225 "
La Salle, (another plant removed)	200 "
Joliet, (another plant removed)	200 "

Mutual Transportation Co.

Cambria	225 lights.
Corsica	225 "
Corona	225 "

Minnesota Steamship Co.

Marina	225 incandescents and two arc lights.
Masaba	225 " " " "
Maritana	400 light dynamo " " " "
Mariposa	400 " " " " "

Anchor Line Steamship Co.

Codorus	225 lights.
Schuylkill	225 "

Passenger Steamers.

Frank E. Kirby	200 lights.
Greyhound	60 "
Pilgrim	60 "
Bon Voyage	75 "
City of Detroit No. 1, (another plant removed)	650 "
City of Detroit No. 2, (another plant removed)	650 "
City of Cleveland, (another plant removed)	650 "

Lake Erie Transportation Co.

S. C. Reynolds	225 lights.
J. C. Gault, (direct connected generating set)	225 "
Russel Sage, (direct connected generating set)	225 "

Menominee Transit Co.

Norman	225 lights.
Roman	225 "
Briton	225 "
German	225 "
Saxon	225 "
Grecian	225 "

Toledo & Ann Arbor Car Ferries.

Ann Arbor No. 1	150 incandescents and one search light.
Ann Arbor No. 2	150 " " " "

United States Cruisers.

U. S. gunboat, Machias, (two direct connected sets), 300 lights.	
U. S. gunboat, Castine, " " " " 300 "	

United States Light-House Tenders.

U. S. light-house tender, Lilac, 100 lights and one search light.	
U. S. " " " Columbine, 100 " " " "	

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Automatic Incandescent Lighting Plant,

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Fisher Electric Company, **Detroit, Mich.**

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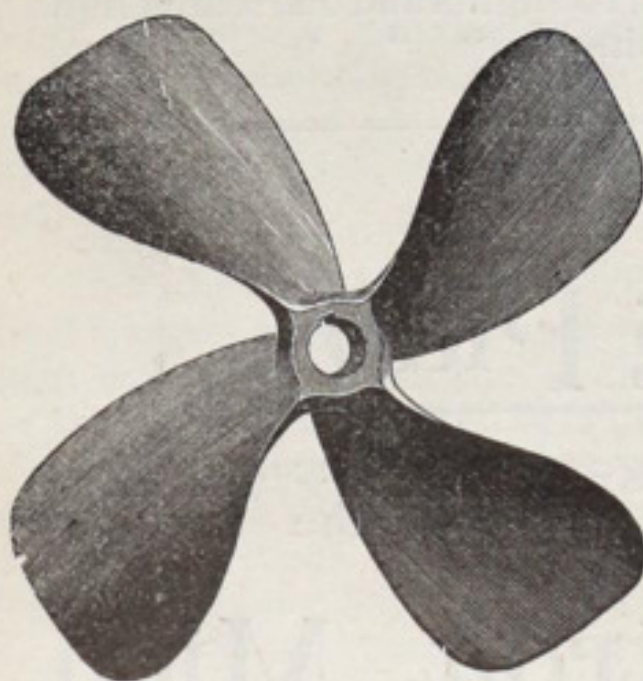
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UNITED STATES ENGINEER OFFICE, 121 Franklin street, Buffalo, N. Y., October 1, 1892. Sealed proposals for (1) Extension of north pier, Erie Harbor, Pa. (2) Rebuilding and repairing superstructure, breakwater and pier, Dunkirk Harbor, N. Y., will be received at this office until 2 p. m., November 1, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. MAJOR E. H. RUFFNER, Corps of Engineers. Oct. 20.

U. S. ENGINEER OFFICE, HICKOX BUILDING, 185 Euclid Avenue, Cleveland, Ohio, Sept. 30, 1892. Sealed proposals for Extension of Breakwater at Cleveland Harbor, Ohio, will be received at this office, until 2 o'clock P. M., of Thursday, October 20th, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. JARED A. SMITH, Corps of Engineers, U. S. A.

U. S. ENGINEER OFFICE, HICKOX BUILDING, 185 Euclid Avenue, Cleveland, Ohio, September 30, 1892. Sealed proposals for Removal and Rebuilding of Piers at Ashtabula Harbor, Ohio, will be received at this office until 2 o'clock P. M. of Thursday, October 20, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. JARED A. SMITH, Lieut.-Col. Corps of Engineers, U. S. A.

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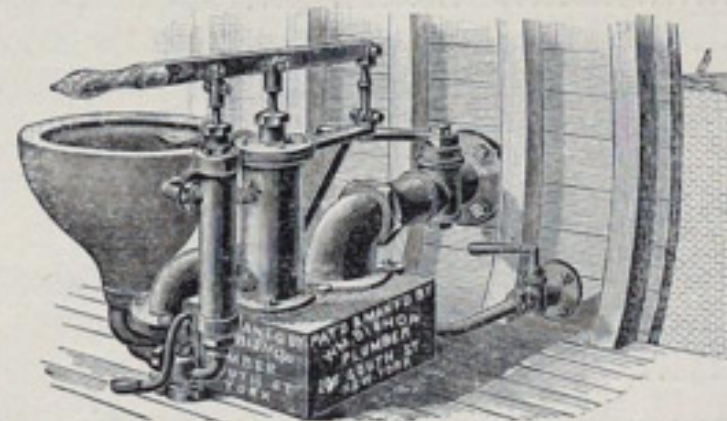
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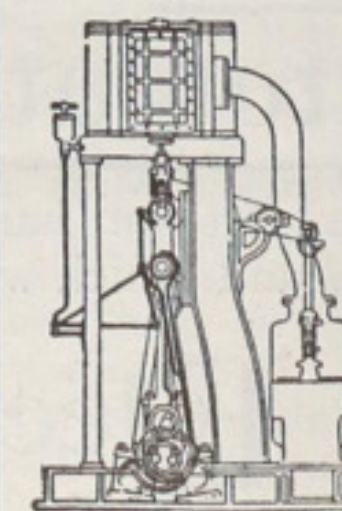
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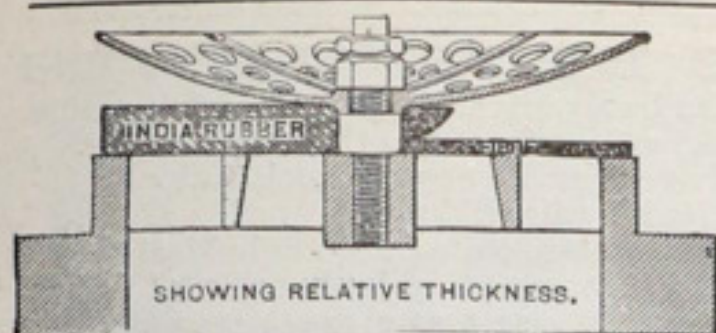
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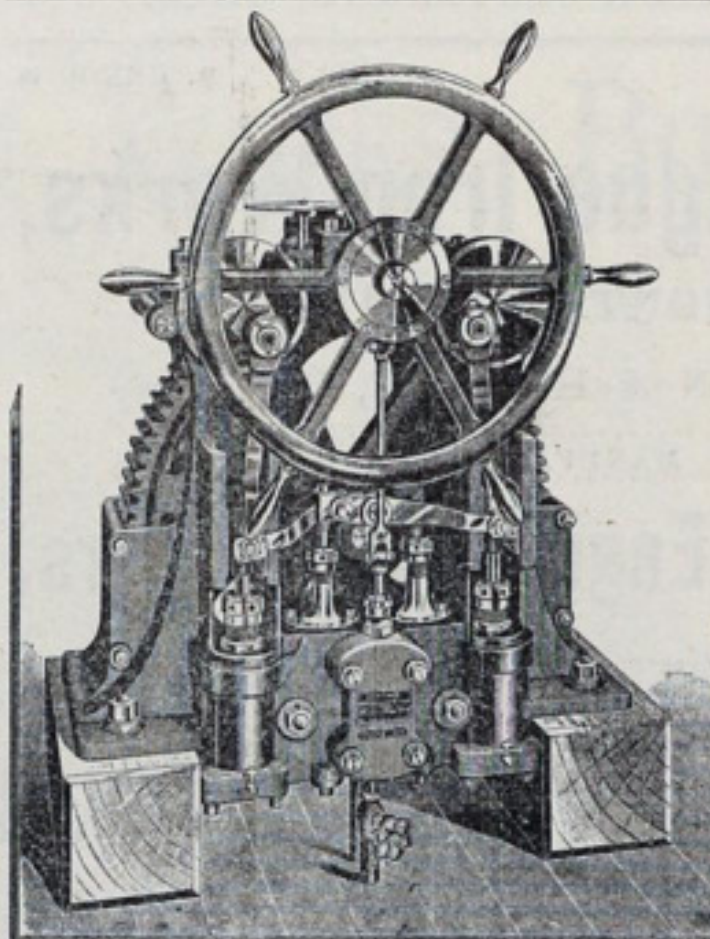
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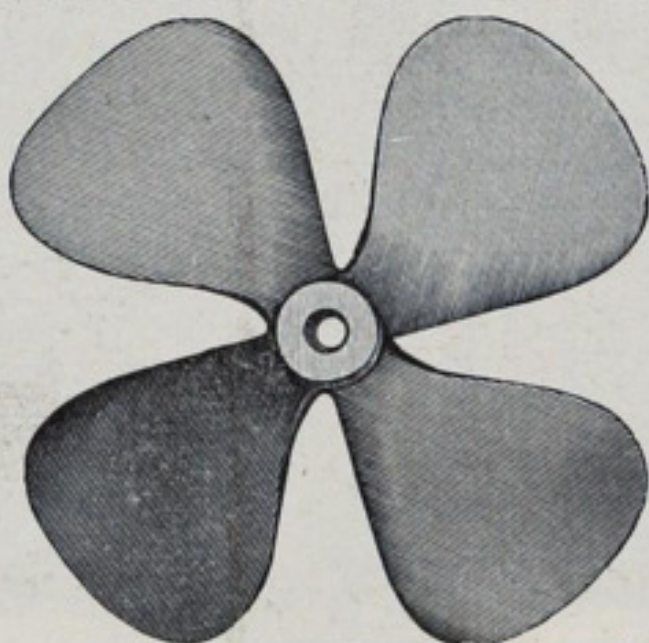
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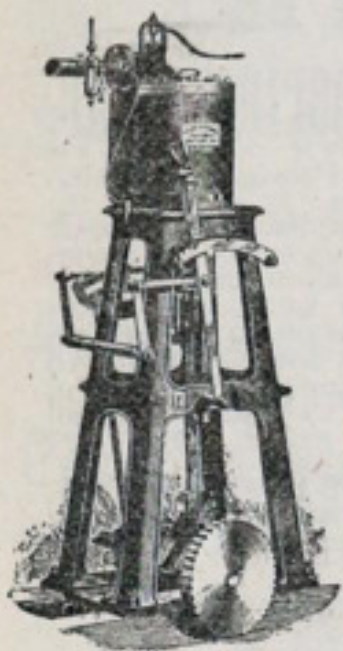
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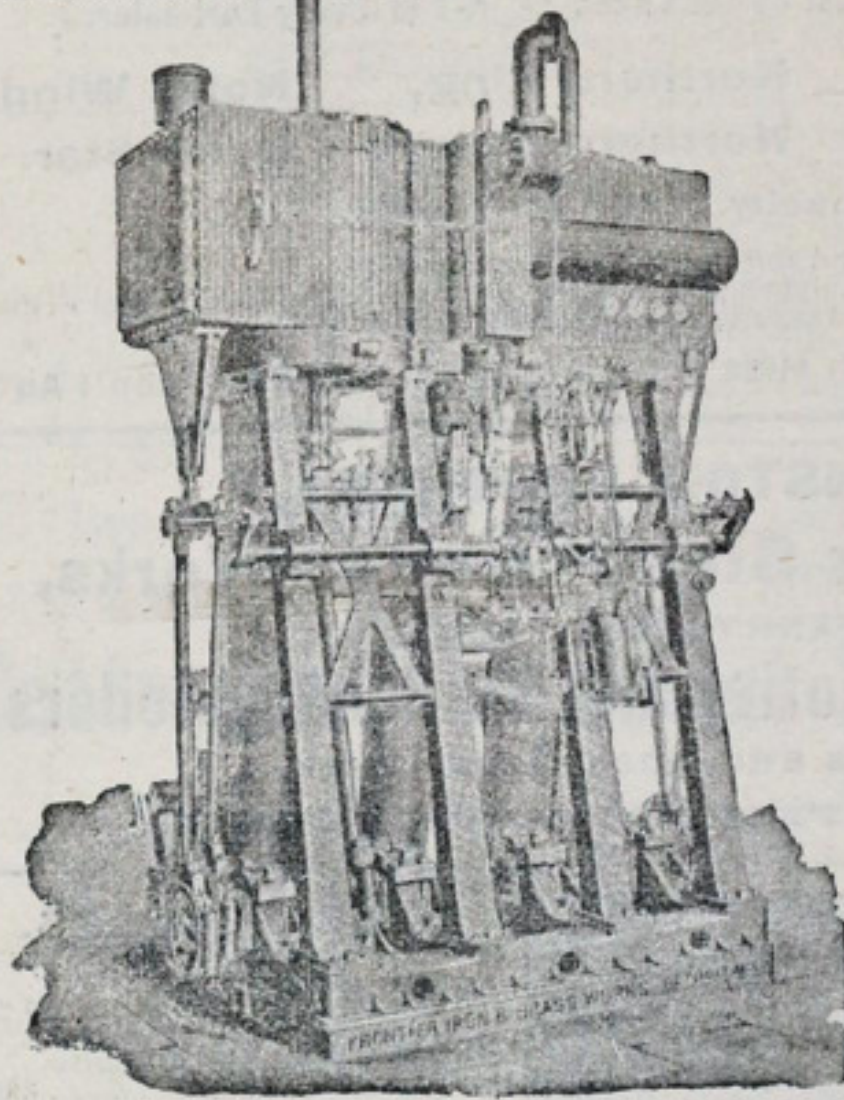
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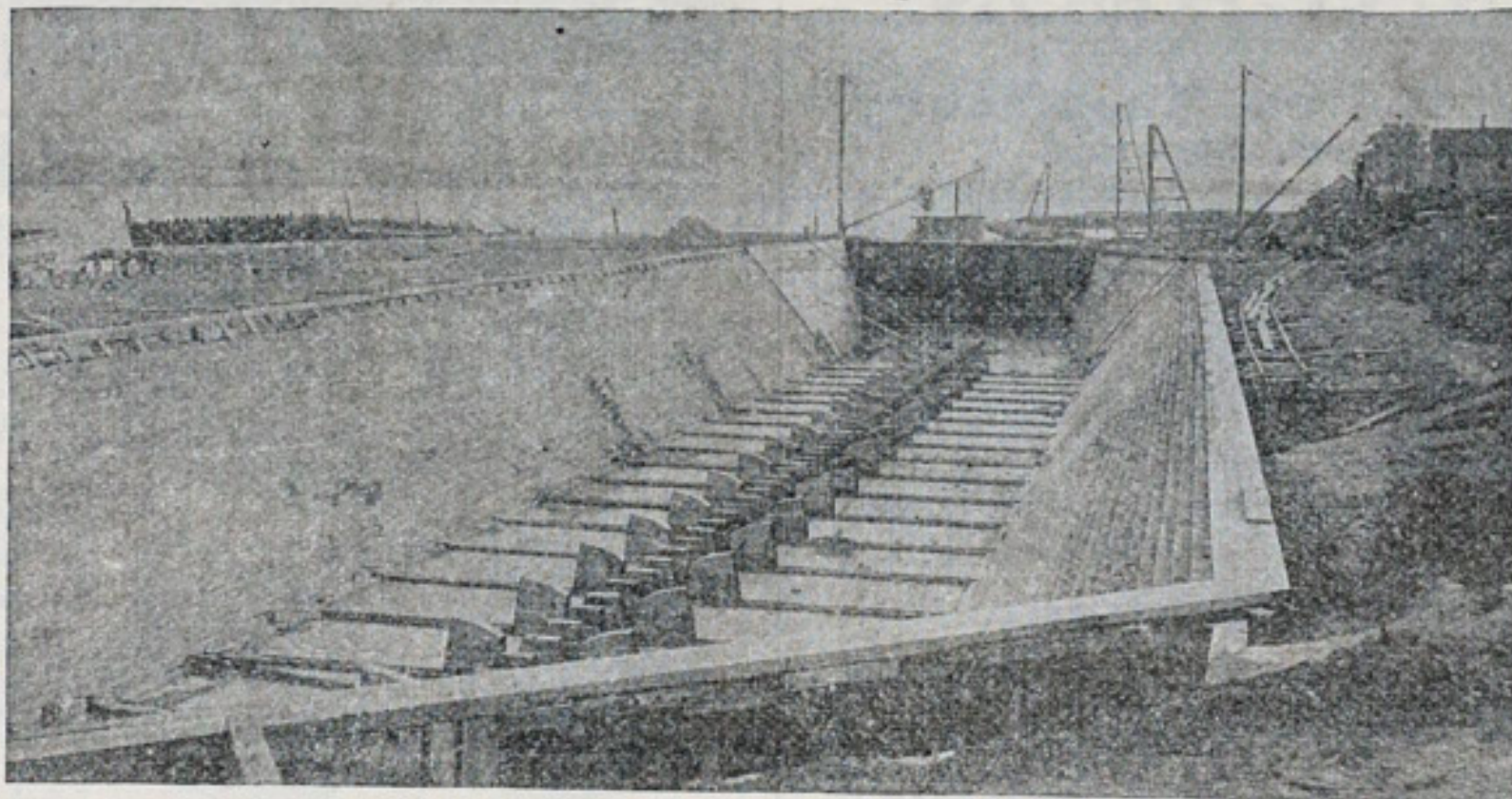
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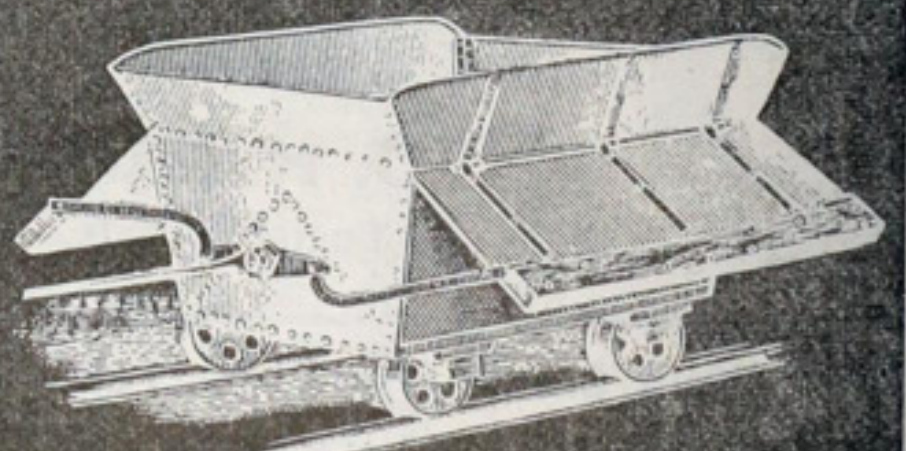
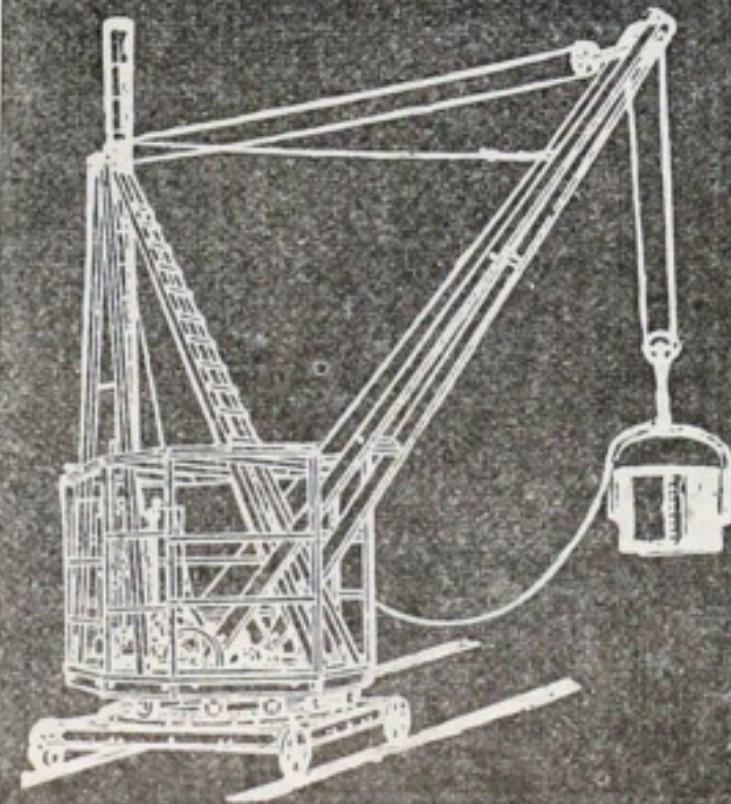
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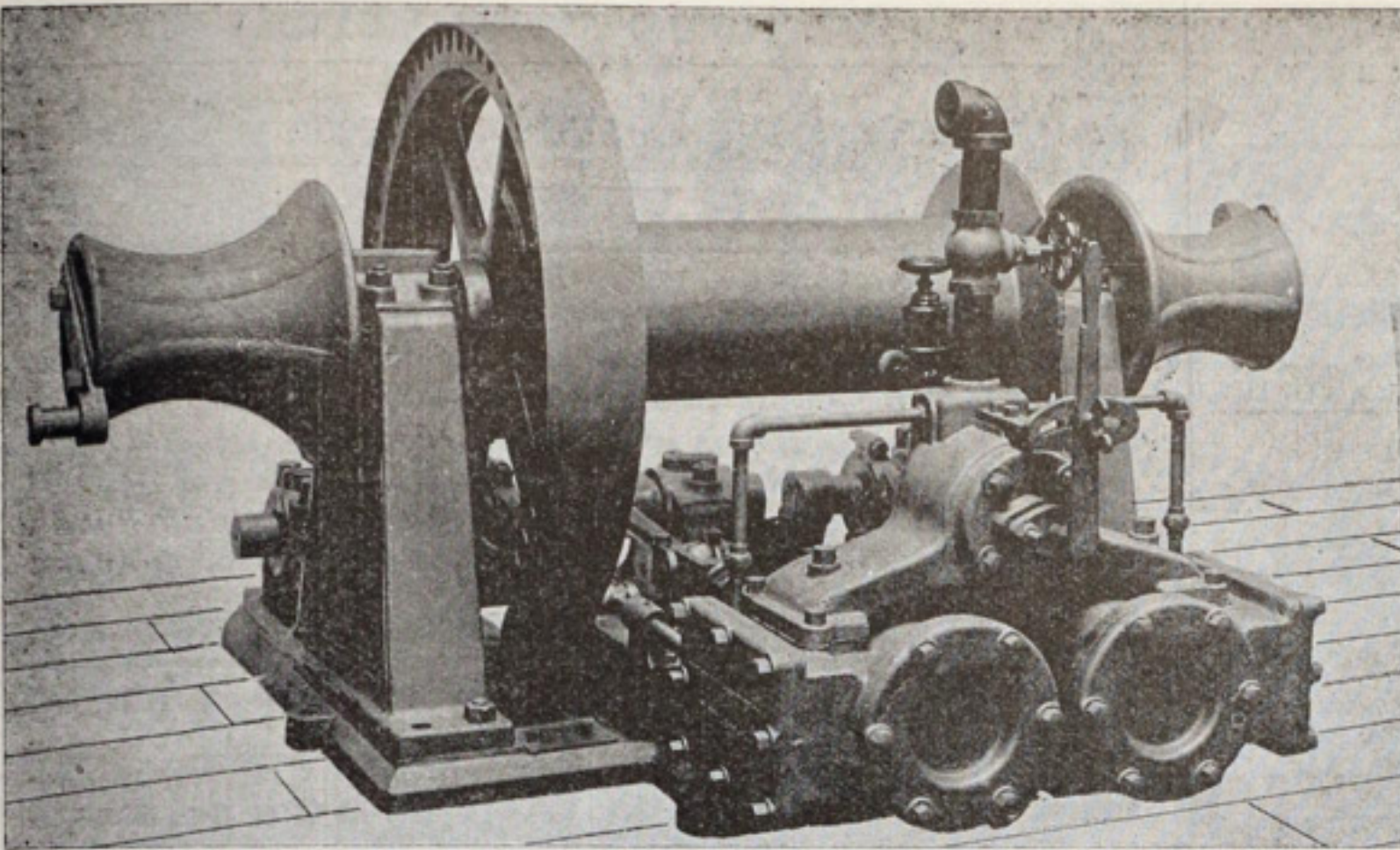
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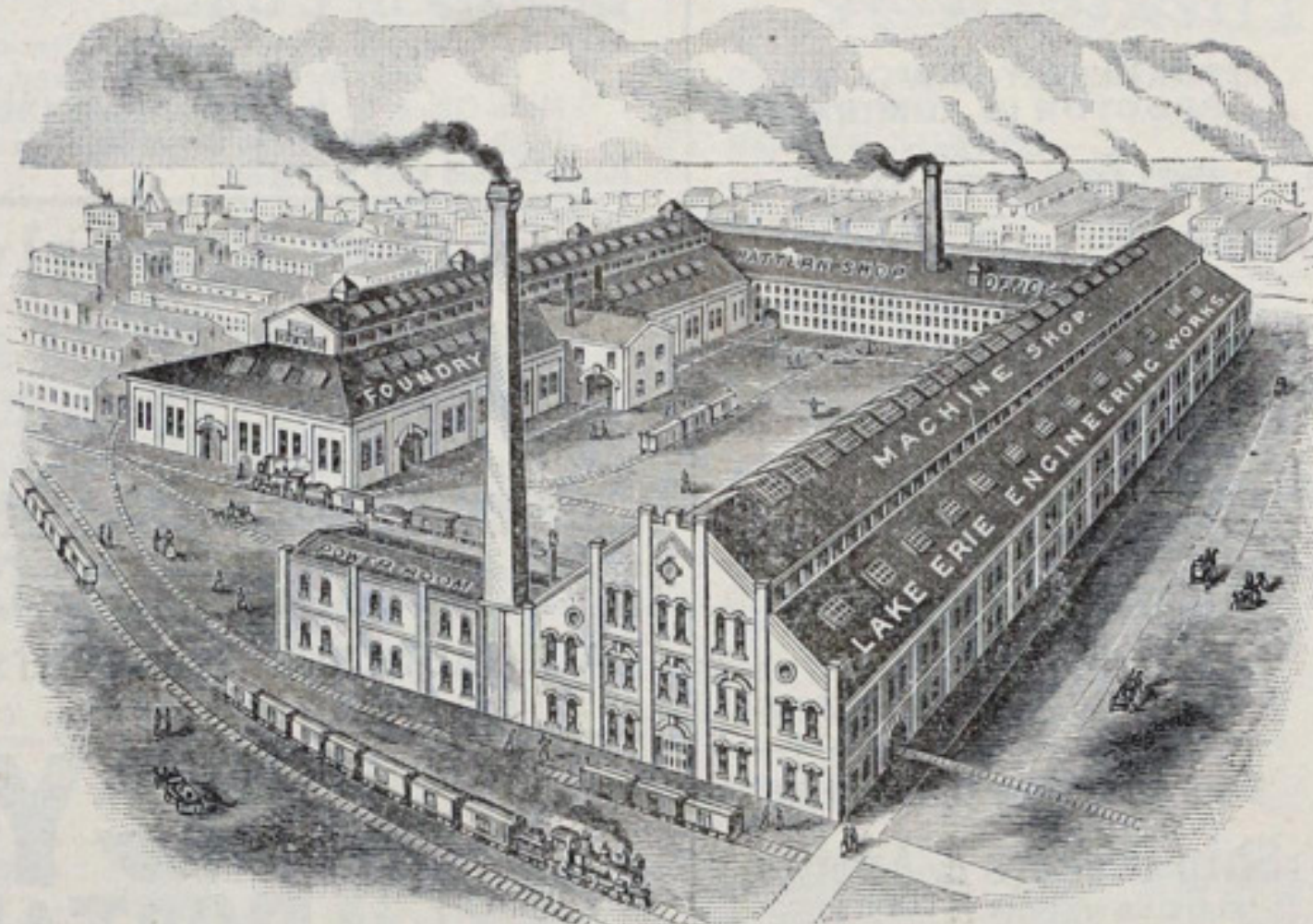
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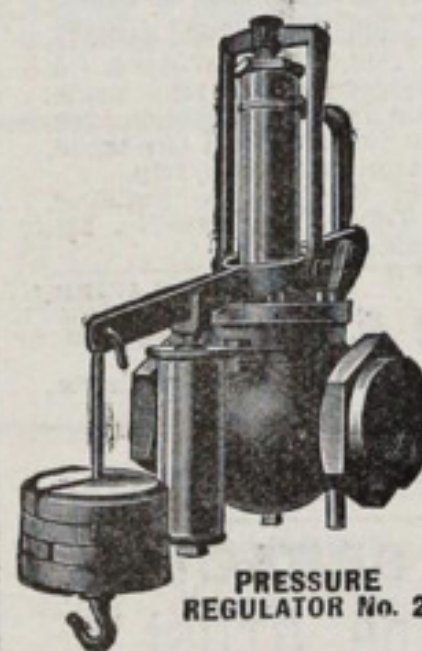
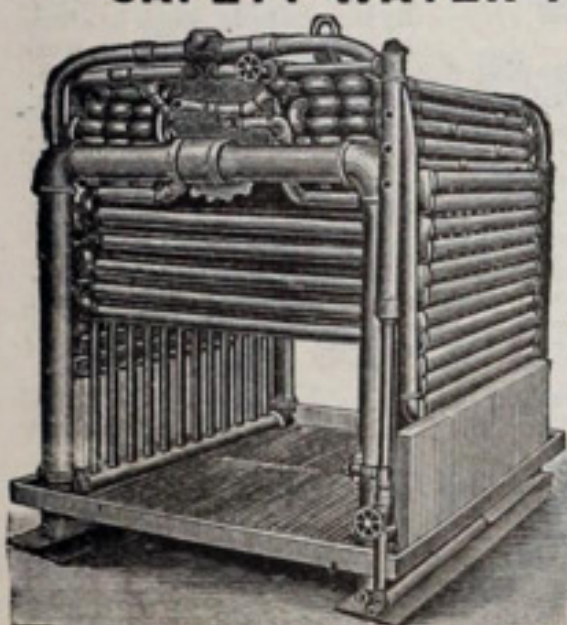
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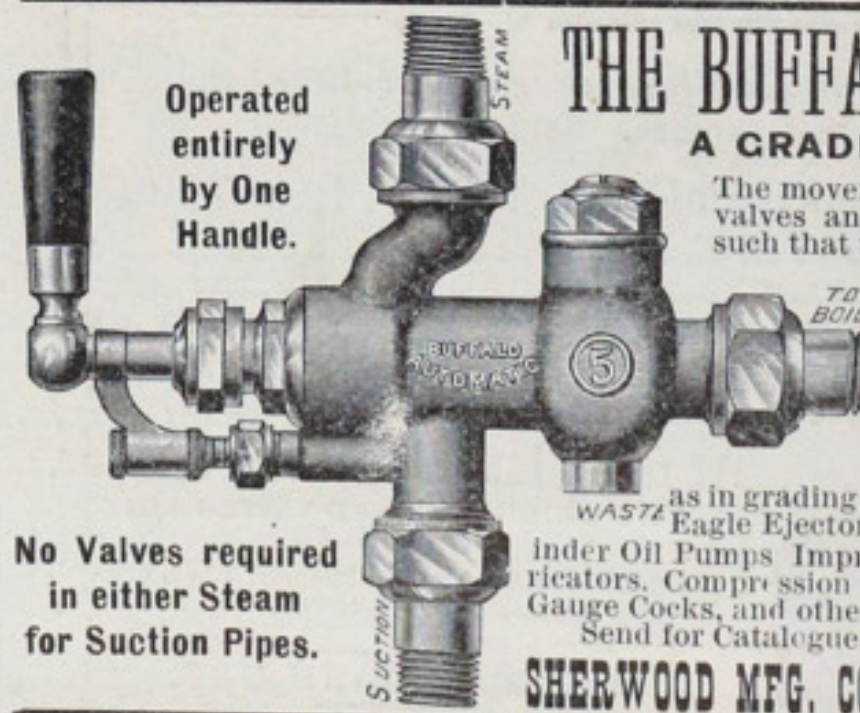
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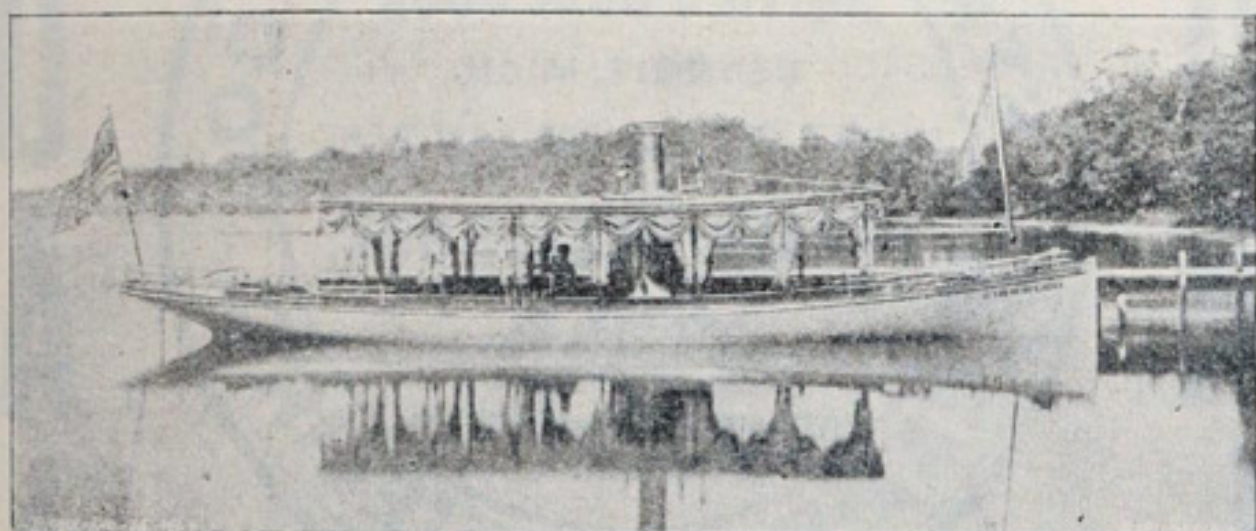
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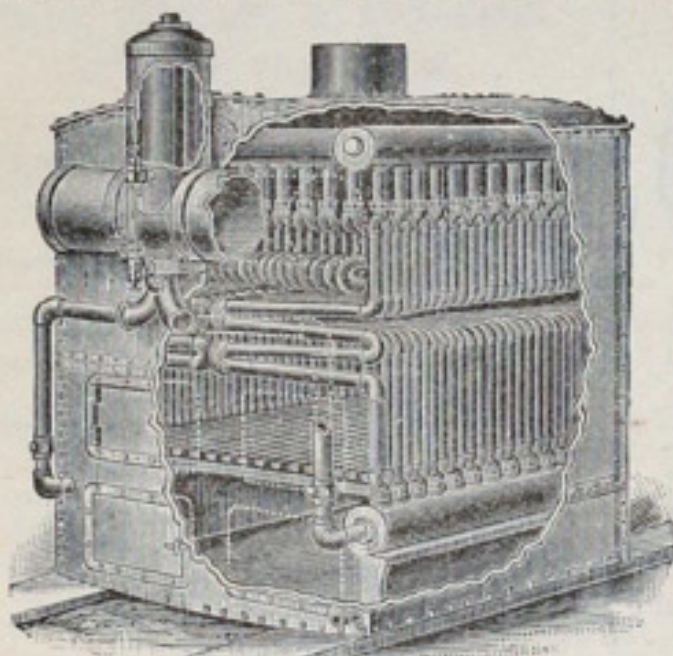
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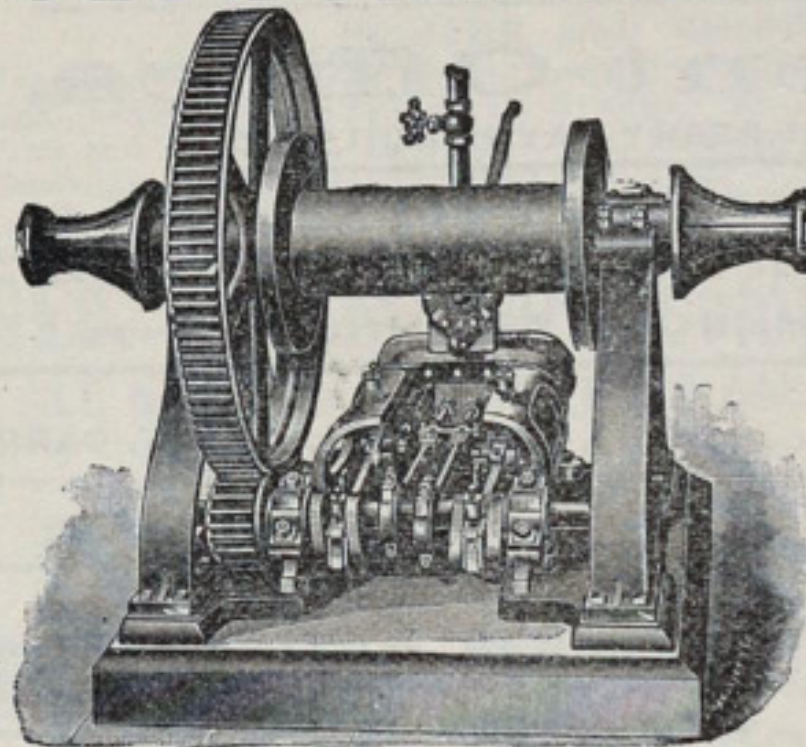
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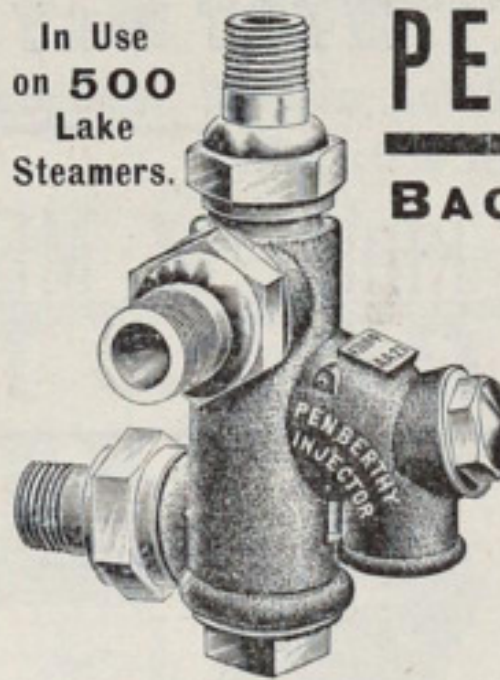
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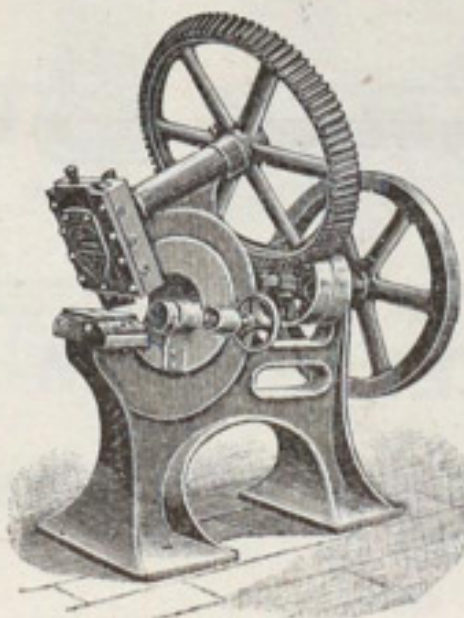
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